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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,131	02/27/2004	Tisna Tjiptahardja	Q79967	4664

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EXAMINER

COLLINS, TIMOTHY D

ART UNIT PAPER NUMBER

3643

DATE MAILED: 05/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/787,131

Applicant(s)

TJIPTAHARDJA ET AL.

Examiner

Timothy D Collins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/27/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: the number 70 and the letter Q. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be

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accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

3. The disclosure is objected to because of the following informalities: it is missing a description of the number 70 and the letter Q which are shown in the figures.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 3, it is unclear if the applicant intends to claim 1 branch or 4 branches of the heat exchange fluid circulation path. For instance in the claim it calls for a branch that is connected to the outlet of the evaporator that is connected to multiple sides, however this could be one branch with only one evaporator connected to all the sides, or it could be individual branches each with separate evaporators which are individually connected to one side each. It is therefore unclear what exactly the applicant wishes to claim. Because of this confusion, the examiner takes the claim as being " an evaporator which is coupled to a shelf with a loop running to a side with the condensers being at the radiator on the side of the craft" for the purposes of examination on the merits.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6478258 to Yee (hereinafter called 258) in view of applicant's admission from pages 2 and 3 of the specification that heat pipes are known to be used in geostationary communication satellites with the North, South, east/west/Earth/anti-Earth faces being used for heat dissipation for the electronics with the heat pipes.

a. Re claim 1, 258 discloses the use of loop heat pipes 11 (heat transfer means) connected to the internally located equipment panels 12 and to the externally located radiator panels 13 which may be on all the sides of the satellite, all as seen in column 2 at lines 15-18,31-34, and 36-59. 258 also discloses at least one shelf in that the equipment panels 12 are "shelves" because they hold the equipment that is generating heat which must be dissipated. However 258 may not specifically disclose that the satellite is a communications satellite in a geostationary orbit, but the applicant's admission teaches of these known satellites. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the

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teachings of these known satellites into the device of 258 so as to allow for the efficient cooling of the electronics of the satellite as taught by 258.

b. Re claim 2, 258 discloses at least one capillary pumped two phase fluid loop inherently because the loop heat pipes use capillary action to wick the liquid to the hot side and then the heat vaporizes the liquid into a gas which then flows to the cold side where it is condensed back into a liquid. This gas to liquid shift is a phase change, because the gas and liquid are each phases of the coolant or heat exchange fluid material. Therefore this is a two phase fluid loop.

c. Re claim 3, 258 discloses that the loop comprises at least one evaporator 14 which is located near the electronic heat producing equipment which is on the shelf 12, the evaporator inherently having an inlet and an outlet for the heat exchange fluid. Also 258 discloses that the evaporator is thermally connected to the equipment supported by the shelf in that it states that the equipment is mounted on the panels and the heat pipes are routed from the panels to the radiator panels, seen at least in column 1 at lines 29-35 and also in column 2 at lines 15-18. Also it is seen that the evaporator 14 is where the heat is collected and then moved to the condenser 15 which is where the heat is radiated off of the craft, as seen in column 2 at lines 36-40. Also 258 discloses that there is an evaporator which is coupled to a shelf with a loop running to a side with the condensers being at the radiator on the side of the craft as seen at least in figure 1. Also as seen in the specification any of the sides may be used as radiator locations.

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d. Re claim 6, as seen in at least figures 1 and 2, there are a plurality of shelves for supporting equipment and a fluid loop for each shelf.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over 258 as applied to claims 1-3 and 6 above, and further in view of USPN 4899810 to Fredley (hereinafter called 810).

e. Re claim 4, 258 as modified above may not specifically disclose that there is an isolator at the outlet of the condenser to block uncondensed vapor, however 810 teaches of this at least in column 3 at lines 5-13. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the teachings of isolators into the device of 258 as modified so as to keep vapor out of the wick and keep the system from being deprimed as taught by 810, while making it work more efficiently.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over 258 as applied to claims 1-3 and 6 above, and further in view of USPN 5806803 to Watts (hereinafter called 803).

f. Re claim 5, 258 as modified above may not specifically disclose that there is a shelf that is parallel to the face of the structure facing Earth, however 803 teaches of this at least in figures 1 and 2, it can be seen that the Earth face is the face that is "up" in the figures and number 36 is a shelf which is parallel and made to carry equipment. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the teachings of parallel shelves to the Earth face into the device of 258 as modified

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so as to use the space more efficiently and make shelves where-ever they will fit to pack in large amounts of electronics. This would allow for a greater load in the satellite and provide a great cost savings by not having to launch as many satellites. Also this is an obvious matter of design choice because the applicant has not disclosed that a shelf parallel to the Earth face solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the shelves in any configuration such as those of the 258 reference.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy D Collins whose telephone number is 571-272-6886. The examiner can normally be reached on M-F, 7:00-3:00, with every other Fri. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter M Poon can be reached on 571-272-6891. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Timothy D. Collins  
Patent Examiner  
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